

ATTACHMENT A
SECTION 25.114 (c) TECHNICAL INFORMATION

SECTION 25.114 (c) INFORMATION FOR AMAZONAS-1 SPACE STATION

(1) Name, address, and telephone number of the applicant;

HISPAMAR SATÉLITES
Praia do Flamengo, 200
17º andar
Distrito Centro – Rio de Janeiro Cep 2204
TEL: + 55 21 2555 4800

(2) Name, address, and telephone number of the person(s), to whom inquiries or correspondence should be directed;

Donald Jansky
JANSKY/BARMAT TELECOM INC.
1120 19th Street, N.W. SUITE 333
WASHINGTON, D.C. 20036
Tel: 202 467 46 00
Fax: 202 296 68 92

(3) Type of authorization requested (e.g., launch authority, station license, modification of authorization);

HISPAMAR SATÉLITES, S.A. (hereinafter HISPAMAR SATÉLITES) requests the Commission to add the AMAZONAS-1 satellite on the "Permitted Space Station List" created by the Commission in *Amendment of the Commission's Regulatory Policies to Allow Non-U.S. Licensed Space Stations to Provide Domestic and International Satellite Service in the United States, Order, IB Docket No. 96-111, 15 FCC Rcd 7207 (1999) (DISCO II First Consideration Order)*.

The AMAZONAS-1 satellite will be launched on 2nd Q. 2004 [June 2004] and be operated at the 61 W.L. orbital location.

(4) General description of overall system facilities, operations and services;

AMAZONAS-1 is a multi-mission system with payloads such as in C-Band as in Ku-Band. This system will be used to satisfy the needs of communications by satellite in the Americas with transatlantic connectivity with Europe and the North of the Africa.

HISPAMAR SATÉLITES will operate a satellite system at 61º W.L. to provide a wide range of telecommunications services, including routing and DTH delivery of video and audio programs, satellite news gathering, VSAT applications, Internet backbone services, broadband links, Multimedia and interactive services, capacity for both public and private networks, etc.

(5) a) Radio frequencies and polarization plan (including beacon, telemetry and telecommand functions);

The frequency and polarization plan of the AMAZONAS-1 satellite is shown in Figure 1 and recapped in Table 1.

Polarization V and H are orthogonal linear polarizations and are defined as follows:

- Horizontal polarization (H) is defined as being parallel to the equatorial plane.
- Vertical polarization (V) is orthogonal to that of polarization H

The total number of operating Ku-band transponders in the AMAZONAS-1 satellite is 32, which can be selected by ground command. Moreover, the AMAZONAS-1 satellite also presents a C-payload with 19 transponders. Therefore, the total number of AMAZONAS-1's 36MHz equivalent transponders is 63.

The following frequencies and polarizations will be used for the telecommand and telemetry and beacon functions:

- Ku band:

TC-Brazil frequency: 14498 MHz, horizontal polarization;
TC- Europe frequency: 13999.5 MHz, horizontal polarization;
TM/Ranging frequency (BRAZIL/NORTH-AMERICA/SOUTH-AMERICA): 11701.25 MHz, vertical polarization.
TM/Ranging frequency (EUROPE): 12746.75 MHz, vertical polarization.

- C band:

Beacon frequency: 4199 MHz, horizontal polarization.

b) Center frequency and polarization of transponders (both receiving and transmitting frequencies); transponder bandwidth;

The receive and transmit center frequencies and polarizations of the AMAZONAS-1's transponders are shown in Figure 1&Table 1 and Figure 2&Table 2, for both Ku and C-Band payloads respectively.

The bandwidth of each transponder is given in Table 1 and Table 2 for Ku and C-Bands respectively.

c) Emission designators and allocated bandwidth of emission;

Emission designators: 60K0G7W-- to 36M0G7X--
Allocated bandwidth: 60.0 KHz to 36 MHz

d) Identification of which antenna beams are connected or switchable to each transponder and TT&C function,

The AMAZONAS-1 satellite uses for the Ku-Band payload, fixed receive and transmit beams over Europe (EUROPE beam), Brazil (BRAZIL Beam) and over the Americas (NORTH AMERICA and SOUTH AMERICA beams) for the Fixed Satellite Service.

The C-Band payloads of AMAZONAS-1 satellite uses only one fixed receive and transmit beam over the Americas (PANAMERICAN Beam) for the Fixed Satellite Service.

The Ku-Band coverage zones are:

- EUROPE Coverage, that covers Iberian Peninsula, Balearics, Canaries, Azores/Madeira Islands, as well as the South of UK, great part of France, Morocco and Algeria.
- SOUTH AMERICA Coverage, that covers from Venezuela and Colombia to the South of Argentina and Chile.
- NORTH AMERICA Coverage, that includes from the North of USA to the South of Panama, including Mexico and most of the Caribbean Islands.
- BRAZIL Coverage, that includes the whole Brazilian Territory.

The C-Band Panamerican beam will cover Brazil and from USA to the South of Argentina.

Figure 3 and Figure 4 show the coverage of the NORTH AMERICA transmit beam and the NORTH AMERICA receive beam respectively, as seen from 61° W.L. orbital location.

Figure 7 and Figure 8 show the coverage of the SOUTH AMERICA transmit beam and the SOUTH AMERICA receive beam respectively, as seen from 61° W.L. orbital location.

Figure 11 and Figure 12 show the coverage of the EUROPE transmit beam and the EUROPE receive beam respectively, as seen from 61° W.L. orbital location.

Figure 15 and Figure 16 show the coverage of the BRAZIL transmit beam and the BRAZIL receive beam respectively, as seen from 61° W.L. orbital location.

Figure 19 and Figure 20 show the coverage of the C-BAND PANAMERICAN transmit beam and the C-BAND PANAMERICAN receive beam respectively, as seen from 61° W.L. orbital location.

e) Final amplifier output power (identify any net losses between output of final amplifier and input of antenna and specify the maximum EIRP for each antenna beam),

Final amplifier output power EUROPE beam: 17.7 dBW (net losses between output of final amplifier and input of antenna: 2.3 dB)

Final amplifier output power BRAZIL beam: 18.1 dBW (net losses between output of final amplifier and input of antenna: 1.9 dB)

Final amplifier output power NORTH AMERICA beam: 18.1 dBW (net losses between output of final amplifier and input of antenna: 1.9 dB)

Final amplifier output power SOUTH AMERICA beam: 18.1 dBW (net losses between output of final amplifier and input of antenna: 1.9 dB)

Final amplifier output power C-BAND PANAMERICAN beam: 15.7 dBW (net losses between output of final amplifier and input of antenna: 1.5 dB)

Maximum EIRP at saturation in each transmit beam:

- EUROPE transmit beam: 50 dBW
- BRAZIL transmit beam: 53 dBW
- NORTH AMERICA transmit beam: 48 dBW
- SOUTH AMERICA transmit beam: 48 dBW
- C-BAND PANAMERICAN transmit beam: 41 dBW

Figures 3, 7, 11, 15 and 19 give EIRP contours for NORTH AMERICA, SOUTH AMERICA, EUROPE, BRAZIL and C-BAND PANAMERICAN transmit beams respectively.

f) Receiving system noise temperature,

428K, 478K, 403K, 487K and 446K for NORTH AMERICA, SOUTH AMERICA, EUROPE, BRAZIL and C-BAND PANAMERICAN receive antenna respectively.

g) Relationship between satellite receive antenna gain pattern and gain-to-temperature ratio and saturation flux density for each antenna beam (may be indicated on antenna gain plot),

Figures 4, 8, 12, 16 and 20 give G/T contours for the NORTH AMERICA, SOUTH AMERICA, EUROPE, BRAZIL and C-BAND PANAMERICAN receive beams respectively.

Saturation flux density for BRAZIL receive beam is:

- (86.0 - X) dBW/m² at minimum gain setting (see 5 h below)
- (104.0 - X) dBW/m² at maximum gain setting (see 5 h below)

where X is the G/T value in the direction considered

Saturation flux density for NORTH AMERICA receive beam is:

- (76.0 - X) dBW/m² at minimum gain setting (see 5 h below)
- (94.0 - X) dBW/m² at maximum gain setting (see 5 h below)

where X is the G/T value in the direction considered

Saturation flux density for SOUTH AMERICA receive beam is:

- (76.0 - X) dBW/m² at minimum gain setting (see 5 h below)
- (94.0 - X) dBW/m² at maximum gain setting (see 5 h below)

where X is the G/T value in the direction considered

Saturation flux density for EUROPE receive beam is:

- (85.0 - X) dBW/m² at minimum gain setting (see 5 h below)
- (103.0 - X) dBW/m² at maximum gain setting (see 5 h below)

where X is the G/T value in the direction considered

Saturation flux density for C-BAND PANAMERICAN receive beam is:

- (79.0 - X) dBW/m² at minimum gain setting (see 5 h below)
- (97.0 - X) dBW/m² at maximum gain setting (see 5 h below)

where X is the G/T value in the direction considered

h) Gain of each transponder channel (between output of receiving antenna and input of transmitting antenna) including any adjustable gain step capabilities,

The gain of each transponder channel, between output of receiving antenna and input of transmitting antenna, will be adjustable by lower than 1 dB between a minimum gain of 109.1 dB and a maximum gain of 127.1 dB for BRAZIL-BRAZIL, NORTH AMERICA-SOUTH AMERICA, EUROPE-NORTH AMERICA and EUROPE-SOUTH AMERICA receive-transmit connectivity. For SOUTH AMERICA-NORTH AMERICA and SOUTH AMERICA-SOUTH AMERICA receive-transmit connectivity between a minimum gain of 109.1 dB and a maximum gain of 128.1 dB. For the case of NORTH AMERICA-EUROPE connectivity between a minimum gain 108.7 dB and a maximum gain of 126.7 dB or between a minimum gain of 108.7 dB and a maximum gain of 127.7 dB for SOUTH AMERICA-EUROPE receive transmit connectivity.

i) Predicted receiver and transmitted channel filter response characteristics;

Channel filter response characteristics are described in tables 3, 4, 5 and 6.

(6) For satellites in geostationary-satellite orbit, orbital location or locations,

The AMAZONAS-1 satellite will be operated at the 61°W.L. orbital location. Operation of the AMAZONAS-1 satellite has been coordinated with United States.

(7) Predicted space station antenna gain contours for each transmit and each receive antenna beam, plotted on an area map at 2dB intervals down to 10 dB below the peak value of the parameter and at 5 dB intervals between 10 dB and 20 dB below the peak value, with the peak value and sense of polarization clearly specified on each plotted contour;

Figures 5 and 6 contain the space station antenna gain contours for NORTH AMERICA transmit and receive beams respectively.

Figures 9 and 10 contain the space station antenna gain contours for SOUTH AMERICA transmit and receive beams respectively.

Figures 13 and 14 contain the space station antenna gain contours for EUROPE transmit and receive beams respectively.

Figures 17 and 18 contain the space station antenna gain contours for BRAZIL transmit and receive beams respectively.

Figures 21 and 22 contain the space station antenna gain contours for C-BAND PANAMERICAN transmit and receive beams respectively.

(8) Description of types of services to be provided, and the areas to be served,

The AMAZONAS-1 satellite is used for digital communications services, including video and internet applications, with bit rates ranging from 64 Kbit/s, possibly less, to 45 Mbit/s

The AMAZONAS-1 satellite serves from the North of USA to the South of Argentina, including the most of the Caribbean Islands, as well as covers Iberian Peninsula, Balearics, Canaries, Azores/Madeira Islands and the South of UK, great part of France, Morocco and Algeria.

(9) For satellite in geostationary-satellite orbit, accuracy with which the orbital inclination, the antenna axis attitude, and longitudinal drift will be maintained;

The AMAZONAS-1satellite will be maintained at 61° W.L. with an accuracy of +/-0.05 degree. Its orbital inclination will be maintained within +/- 0.05 degree.

Antenna axis stability: 0.1 degree.

(10) Calculation of power flux density levels within each coverage area and of the energy dispersal, if any, needed for compliance with Sec.25.208;

Power flux density levels will not exceed -152 dBW/m² per 4 KHz over the U.S. territory and all the Americas and -148.4 dBW/m² per 4 KHz over Europe.

(11) Arrangement for tracking, telemetry and control;

TTC functions are performed at Rio de Janeiro, Brazil (Longitude -43.28°W, Latitude -22.88°N)

(12) Physical characteristics of the space station including weight and dimensions of spacecraft, detailed mass (on ground and in-orbit) and power (beginning and end of life) budgets, and estimated operational lifetime and reliability of the space station and the basis for that estimate;

Physical characteristics of the AMAZONAS-1satellite:

Dimensions stowed:	6.74m x 3.43m x 3.67m
Deployed:	6.74m x 7.89m x 36.1m
Mass on ground	2121 Kg

	at launch	4536 Kg
Power	beginning of life	11.4 Kw (Equinox)
	end of life	9.7 Kw (Equinox)
	Estimated operational lifetime	16.8 years
	Reliability	0.67 for 15 years

- (13) **Detailed information demonstrating the financial qualifications of the applicant to construct and launch the proposed satellites. Applications shall provide the financial information required by Sec. 25.140 (b) through (e), Sec. 25.142 (a) (4). Or Sec. 25.143 (b) (3), as appropriate;**

See information supplied separately as Attachment B.

- (14) **Clear and detailed statement of whether the space station is to be operated on a common carrier basis, or whether non-common carrier transactions are proposed. If non-common carrier transactions are proposed, describe the nature of the transactions and specify the number of transponders to be offered on a non-common carrier basis;**

The AMAZONAS-1 satellite is operated on a non-common carrier basis and all the transponders will be available for use on a non-common carrier basis. HISPAMAR SATÉLITES leases capacity pursuant to commercial contracts.

It is not HISPAMAR SATÉLITES' customary practice to hold itself out as a common carrier for hire, and HISPAMAR SATÉLITES does not intend to make capacity available on a common carrier basis.

- (15) **Dates by which construction will be commenced and completed, launch date, and estimated date of placement into service;**

The AMAZONAS-1 satellite will be launched on 2nd Quarter 2004 [June 2004].

- (16) **Public interest considerations in support of grant;**

The AMAZONAS-1 satellite will ensure digital transmission services between the United States and Europe at the 61° W.L. orbital location.

The entry of the AMAZONAS-1 satellite into the market to meet US and European customers' demand for such services will enhance competition in that market. Accordingly, the grant of this application is in the public interest.

See also the attached Petition for Declaratory Ruling.

TRANSPONDER	BW(MHZ)	FREQUENCY (MHz)		POLARIZATION		COVERAGE	
		UPLINK	DOWNLINK	UPLINK	DOWNLINK	UPLINK	DOWNLINK
1	36	13772	11972	H	V	NA/SA/EU	NA/SA
2	36	13812	12012	H	V	NA/SA/EU	NA/SA
3	36	13852	12052	H	V	NA/SA/EU	NA/SA
4	36	13892	12092	H	V	NA/SA/EU	NA/SA
5	36	13932	12132	H	V	NA/SA/EU	NA/SA
6	36	13972	12172	H	V	NA/SA/EU	NA/SA
7	36	13772	11972	V	H	NA/SA/EU	NA/SA
8	36	13812	12012	V	H	NA/SA/EU	NA/SA
9	36	13852	12052	V	H	NA/SA/EU	NA/SA
10	36	13892	12092	V	H	NA/SA/EU	NA/SA
11	36	13932	12132	V	H	NA/SA/EU	NA/SA
12	36	13972	12172	V	H	NA/SA/EU	NA/SA
1	36	13772	12522.3	H	V	NA/SA	EU
2	36	13812	12562.3	H	V	NA/SA	EU
3	36	13852	12602.3	H	V	NA/SA	EU
4	36	13892	12642.3	H	V	NA/SA	EU
5	36	13932	12682.3	H	V	NA/SA	EU
6	36	13972	12722.3	H	V	NA/SA	EU
7	36	13772	12522.3	V	H	NA/SA	EU
8	36	13812	12562.3	V	H	NA/SA	EU
9	36	13852	12602.3	V	H	NA/SA	EU
10	36	13892	12642.3	V	H	NA/SA	EU
11	36	13932	12682.3	V	H	NA/SA	EU
12	36	13972	12722.3	V	H	NA/SA	EU
13	54	14034	11738	H	V	NA/SA/B	NA/SA/B
14	54	14095	11799	H	V	NA/SA/B	NA/SA/B
15	54	14034	11738	V	H	NA/SA/B	NA/SA/B
16	54	14095	11799	V	H	NA/SA/B	NA/SA/B
17	54	14156	11860	H	V	NA/SA/B	NA/SA/B
18	54	14217	11921	H	V	NA/SA/B	NA/SA/B
19	54	14156	11860	V	H	NA/SA/B	NA/SA/B
20	54	14217	11921	V	H	NA/SA/B	NA/SA/B
21	36	14271	10975	H	V	B	B
22	36	14311	11015	H	V	B	B
23	36	14351	11055	H	V	B	B
24	36	14391	11095	H	V	B	B
25	36	14431	11135	H	V	B	B
26	36	14471	11175	H	V	B	B
27	36	14271	10975	V	H	B	B
28	36	14311	11015	V	H	B	B
29	36	14351	11055	V	H	B	B
30	36	14391	11095	V	H	B	B
31	36	14431	11135	V	H	B	B
32	36	14471	11175	V	H	B	B

Table 1.- Ku-band Frequency Plan Definition

TRANSPONDER	BW(MHZ)	FREQUENCY (MHz)		POLARIZATION		COVERAGE	
		UPLINK	DOWNLINK	UPLINK	DOWNLINK	UPLINK	DOWNLINK
C1	54	5886	3661	H	V	PANAM.	PANAM.
C2	54	5947	3722	H	V	PANAM.	PANAM.
C3	54	6008	3783	H	V	PANAM.	PANAM.
C4	54	6069	3844	H	V	PANAM.	PANAM.
C5	54	6130	3905	H	V	PANAM.	PANAM.
C6	54	6191	3966	H	V	PANAM.	PANAM.
C7	54	6252	4027	H	V	PANAM.	PANAM.
C8	54	6313	4088	H	V	PANAM.	PANAM.
C9	36	6365	4140	H	V	PANAM.	PANAM.
C10	36	6405	4180	H	V	PANAM.	PANAM.
C11	54	5877	3652	V	H	PANAM.	PANAM.
C12	54	5938	3713	V	H	PANAM.	PANAM.
C13	54	5999	3774	V	H	PANAM.	PANAM.
C14	54	6060	3835	V	H	PANAM.	PANAM.
C15	54	6121	3896	V	H	PANAM.	PANAM.
C16	54	6195	3970	V	H	PANAM.	PANAM.
C17	54	6256	4031	V	H	PANAM.	PANAM.
C18	54	6317	4092	V	H	PANAM.	PANAM.
C19	54	6378	4153	V	H	PANAM.	PANAM.

Table 2.- C-band Frequency Plan Definition

% OF CHANNEL BANDWIDTH		55%	85%	90%	100%
INPUT SECTION GAIN FLATNESS	dBpp	0.65	0.7	1.2	2.3
TOTAL GAIN FLATNESS	dBpp	0.85	1.3	2.4	4.6
INPUT SECTION GAIN SLOPE	dB/MHz	0.15	0.2	0.5	1.3
TOTAL GAIN SLOPE	dB/MHz	0.25	0.4	1.0	2.9

Table 3.- Amplitude in Ku-band response

% OF CHANNEL BANDWIDTH		55%	85%	90%	100%
INPUT SECTION GAIN FLATNESS	dBpp	0.65	1.3	2.0	4.0
TOTAL GAIN FLATNESS	dBpp	0.85	1.9	3.2	6.3
INPUT SECTION GAIN SLOPE	dB/MHz	0.15	0.51	0.92	2.6
TOTAL GAIN SLOPE	dB/MHz	0.25	0.71	1.42	4.2

Table 4.- Amplitude in Ku-band response in Europe Downlink Channels

% OF CHANNEL BANDWIDTH		55%	85%	90%	100%
INPUT SECTION GAIN FLATNESS	dBpp	0.65	0.7	1.2	2.3
TOTAL GAIN FLATNESS	dBpp	0.85	1.3	2.4	4.6
INPUT SECTION GAIN SLOPE	dB/MHz	0.15	0.2	0.5	1.3
TOTAL GAIN SLOPE	dB/MHz	0.25	0.4	1.0	2.9

Table 5.- Amplitude in C-band response

Frequency Spacing from Fc (\pm MHz)	BW-0.6	BW-0.83	BW-1.25
Input Demultiplexer (dB)	18	35	40
Output Multiplexer (dB) (contiguous channels)	11	25	30
Output Multiplexer (dB) (non contiguous channels)	5	20	27

NOTES: BW means transponder bandwidth

Table 6.- Minimum out of band rejection (dB) for Ku and C-bands

The diagram illustrates the orbital configuration of various satellites, categorized into UPLINK and DOWNLINK sections, with a central area for orbital planes.

UPLINK:

- AMERICA:** Satellites include 13794, 13793, 13792, 13791, 13790, 13789, 13788, 13787, 13786, 13785, 13784, 13783, 13782, 13781, 13780, 13779, 13778, 13777, 13776, 13775, 13774, 13773, 13772, 13771, 13770, 13769, 13768, 13767, 13766, 13765, 13764, 13763, 13762, 13761, 13760, 13759, 13758, 13757, 13756, 13755, 13754, 13753, 13752, 13751, 13750, 13749, 13748, 13747, 13746, 13745, 13744, 13743, 13742, 13741, 13740, 13739, 13738, 13737, 13736, 13735, 13734, 13733, 13732, 13731, 13730, 13729, 13728, 13727, 13726, 13725, 13724, 13723, 13722, 13721, 13720, 13719, 13718, 13717, 13716, 13715, 13714, 13713, 13712, 13711, 13710, 13709, 13708, 13707, 13706, 13705, 13704, 13703, 13702, 13701, 13700, 13699, 13698, 13697, 13696, 13695, 13694, 13693, 13692, 13691, 13690, 13689, 13688, 13687, 13686, 13685, 13684, 13683, 13682, 13681, 13680, 13679, 13678, 13677, 13676, 13675, 13674, 13673, 13672, 13671, 13670, 13669, 13668, 13667, 13666, 13665, 13664, 13663, 13662, 13661, 13660, 13659, 13658, 13657, 13656, 13655, 13654, 13653, 13652, 13651, 13650, 13649, 13648, 13647, 13646, 13645, 13644, 13643, 13642, 13641, 13640, 13639, 13638, 13637, 13636, 13635, 13634, 13633, 13632, 13631, 13630, 13629, 13628, 13627, 13626, 13625, 13624, 13623, 13622, 13621, 13620, 13619, 13618, 13617, 13616, 13615, 13614, 13613, 13612, 13611, 13610, 13609, 13608, 13607, 13606, 13605, 13604, 13603, 13602, 13601, 13600, 13599, 13598, 13597, 13596, 13595, 13594, 13593, 13592, 13591, 13590, 13589, 13588, 13587, 13586, 13585, 13584, 13583, 13582, 13581, 13580, 13579, 13578, 13577, 13576, 13575, 13574, 13573, 13572, 13571, 13570, 13569, 13568, 13567, 13566, 13565, 13564, 13563, 13562, 13561, 13560, 13559, 13558, 13557, 13556, 13555, 13554, 13553, 13552, 13551, 13550, 13549, 13548, 13547, 13546, 13545, 13544, 13543, 13542, 13541, 13540, 13539, 13538, 13537, 13536, 13535, 13534, 13533, 13532, 13531, 13530, 13529, 13528, 13527, 13526, 13525, 13524, 13523, 13522, 13521, 13520, 13519, 13518, 13517, 13516, 13515, 13514, 13513, 13512, 13511, 13510, 13509, 13508, 13507, 13506, 13505, 13504, 13503, 13502, 13501, 13500, 13499, 13498, 13497, 13496, 13495, 13494, 13493, 13492, 13491, 13490, 13489, 13488, 13487, 13486, 13485, 13484, 13483, 13482, 13481, 13480, 13479, 13478, 13477, 13476, 13475, 13474, 13473, 13472, 13471, 13470, 13469, 13468, 13467, 13466, 13465, 13464, 13463, 13462, 13461, 13460, 13459, 13458, 13457, 13456, 13455, 13454, 13453, 13452, 13451, 13450, 13449, 13448, 13447, 13446, 13445, 13444, 13443, 13442, 13441, 13440, 13439, 13438, 13437, 13436, 13435, 13434, 13433, 13432, 13431, 13430, 13429, 13428, 13427, 13426, 13425, 13424, 13423, 13422, 13421, 13420, 13419, 13418, 13417, 13416, 13415, 13414, 13413, 13412, 13411, 13410, 13409, 13408, 13407, 13406, 13405, 13404, 13403, 13402, 13401, 13400, 13399, 13398, 13397, 13396, 13395, 13394, 13393, 13392, 13391, 13390, 13389, 13388, 13387, 13386, 13385, 13384, 13383, 13382, 13381, 13380, 13379, 13378, 13377, 13376, 13375, 13374, 13373, 13372, 13371, 13370, 13369, 13368, 13367, 13366, 13365, 13364, 13363, 13362, 13361, 13360, 13359, 13358, 13357, 13356, 13355, 13354, 13353, 13352, 13351, 13350, 13349, 13348, 13347, 13346, 13345, 13344, 13343, 13342, 13341, 13340, 13339, 13338, 13337, 13336, 13335, 13334, 13333, 13332, 13331, 13330, 13329, 13328, 13327, 13326, 13325, 13324, 13323, 13322, 13321, 13320, 13319, 13318, 13317, 13316, 13315, 13314, 13313, 13312, 13311, 13310, 13309, 13308, 13307, 13306, 13305, 13304, 13303, 13302, 13301, 13300, 13299, 13298, 13297, 13296, 13295, 13294, 13293, 13292, 13291, 13290, 13289, 13288, 13287, 13286, 13285, 13284, 13283, 13282, 13281, 13280, 13279, 13278, 13277, 13276, 13275, 13274, 13273, 13272, 13271, 13270, 13269, 13268, 13267, 13266, 13265, 13264, 13263, 13262, 13261, 13260, 13259, 13258, 13257, 13256, 13255, 13254, 13253, 13252, 13251, 13250, 13249, 13248, 13247, 13246, 13245, 13244, 13243, 13242, 13241, 13240, 13239, 13238, 13237, 13236, 13235,

Figure 1.- AMAZONAS-1 Ku-Band Frequency Plan

AMAZONAS-1 C-BAND FREQUENCY PLAN

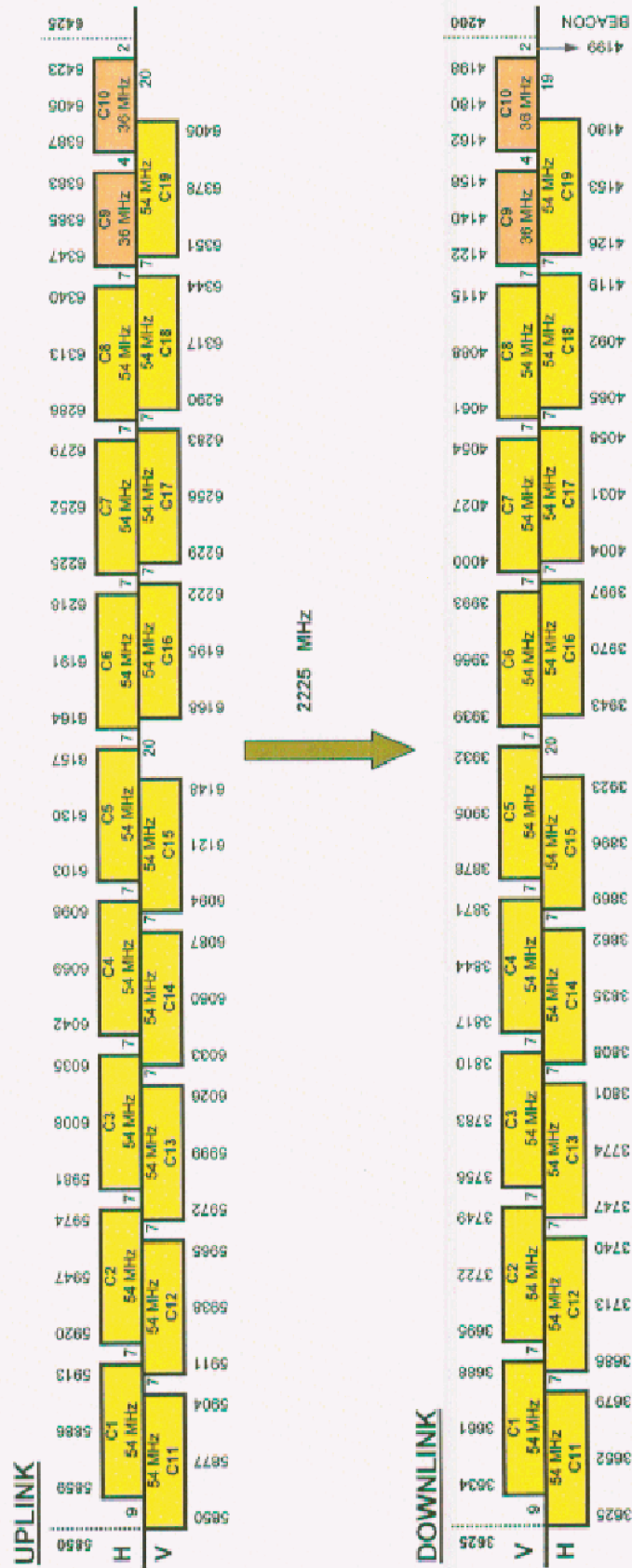


Figure 2.- AMAZONAS-1 C-Band Frequency Plan

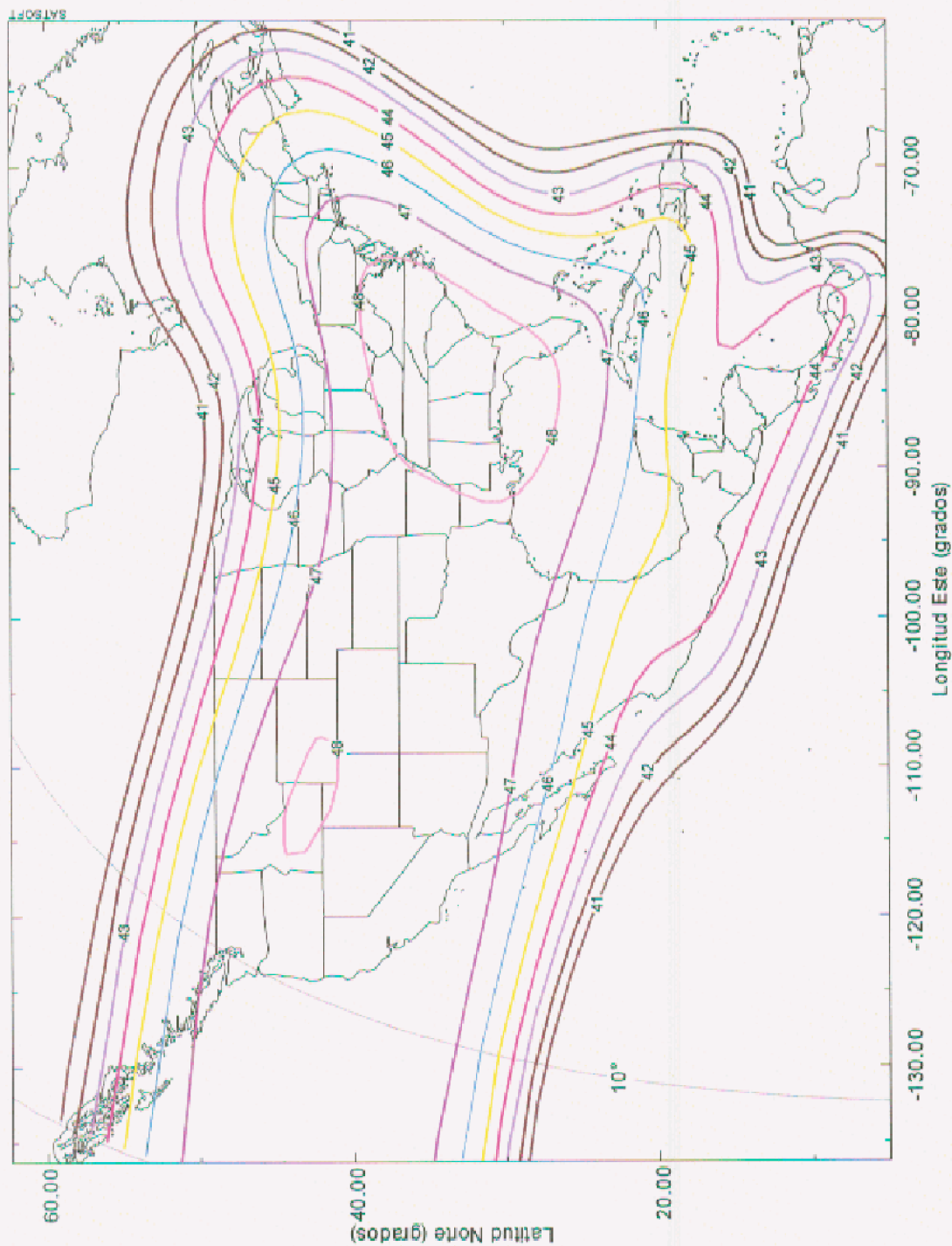


Figure 3.- Illustration of the AMAZONAS-1 North America transmit coverage (61°W). EIRP characteristics (dBW)

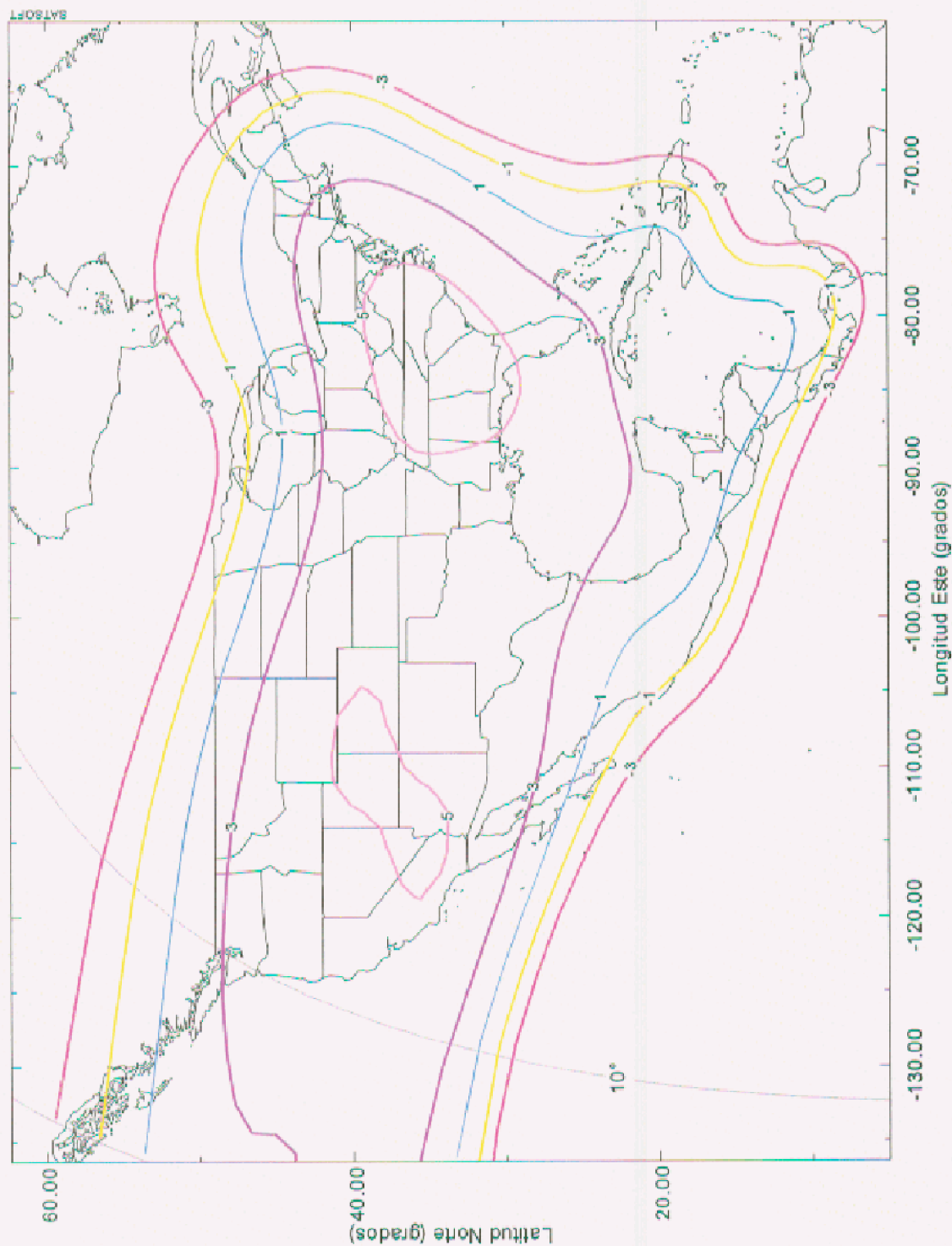


Figure 4.- Illustration of the AMAZONAS-1 North America receive coverage (61°W). G/T characteristics (dB/K)

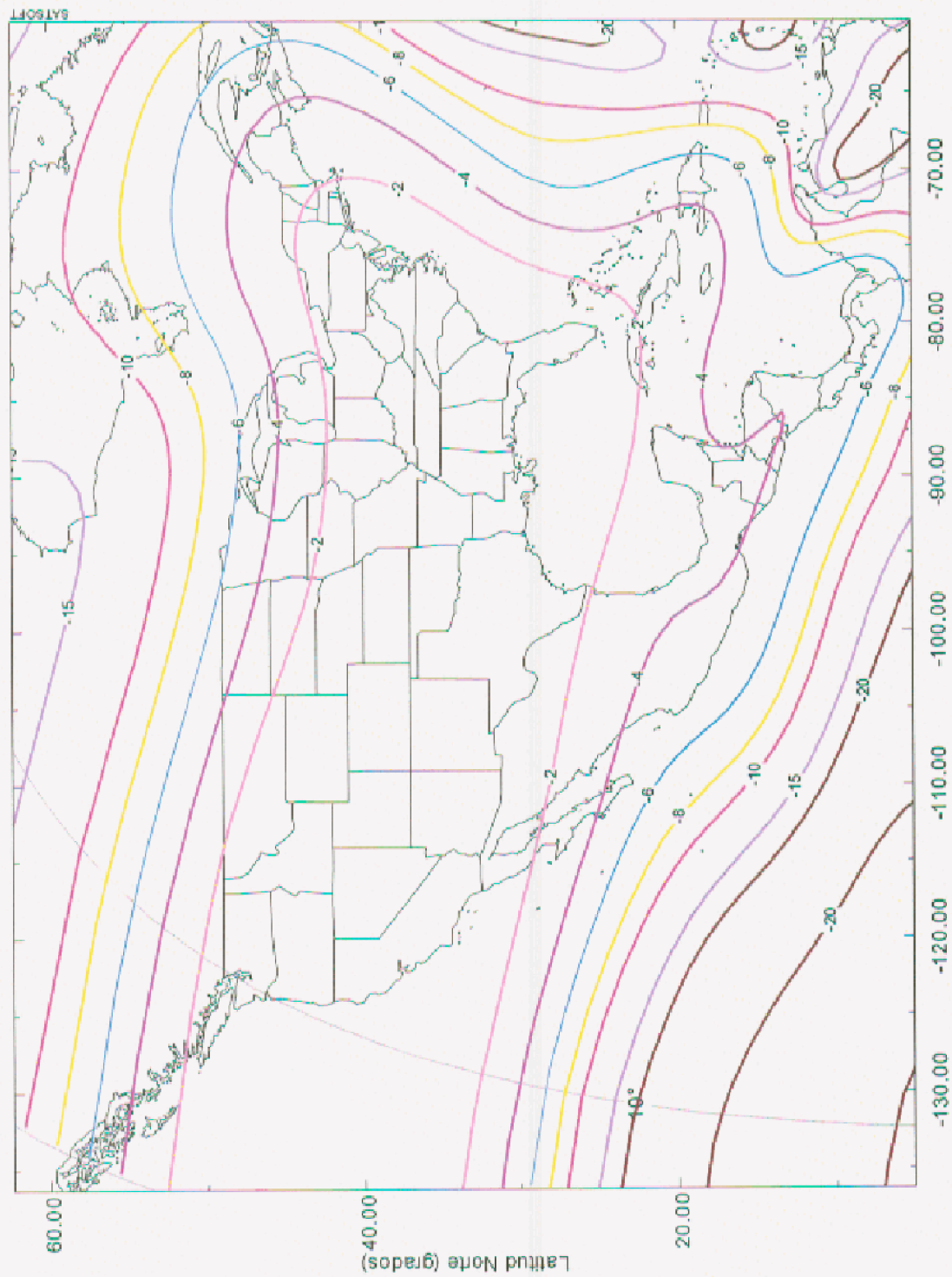


Figure 5.- Illustration of the AMAZONAS-1 transmit beam. Gain peak 29.9 dBi

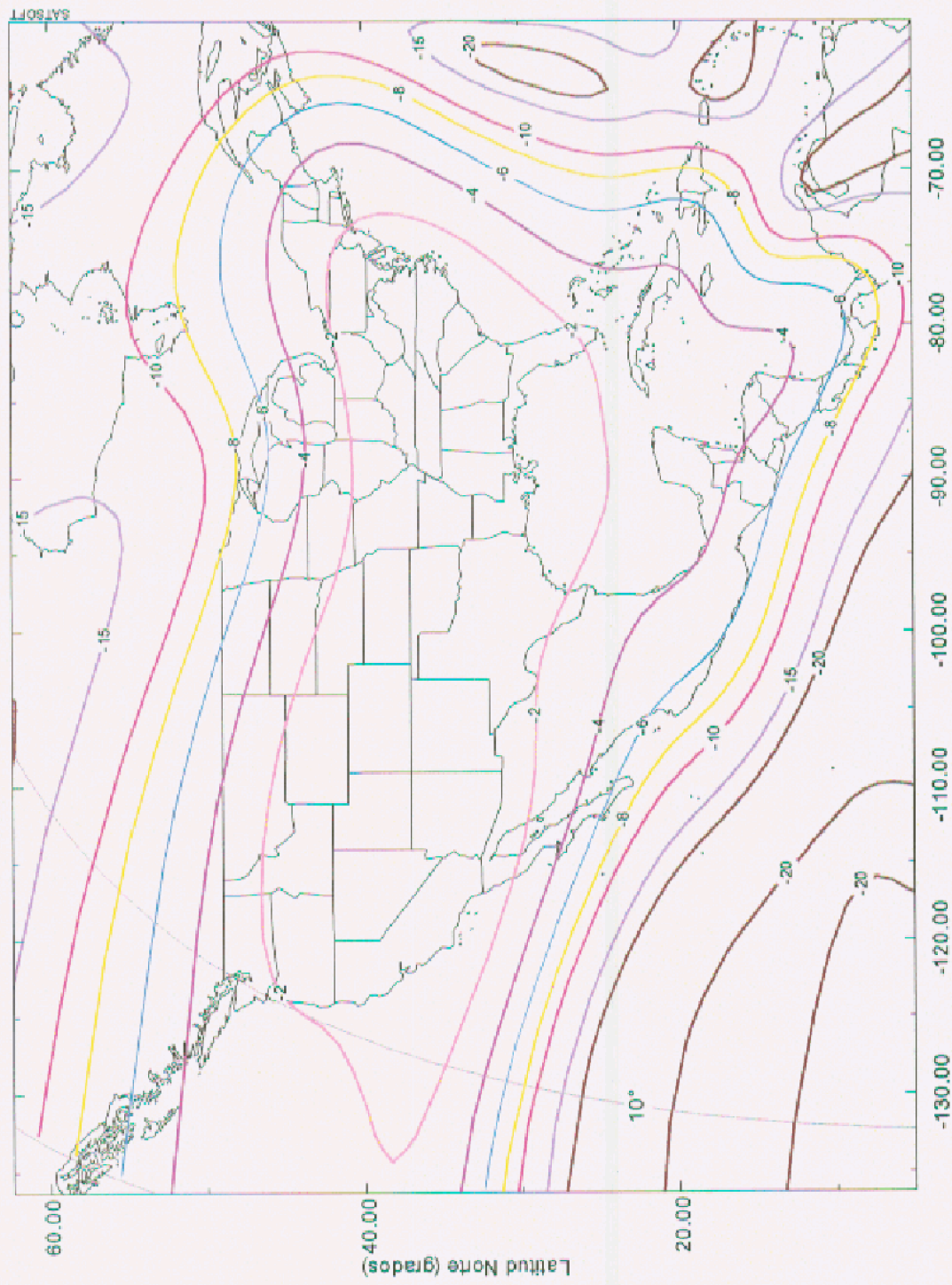


Figure 6.- Illustration of the AMAZONAS-1 receive beam. Gain Peak 31.0 dBi

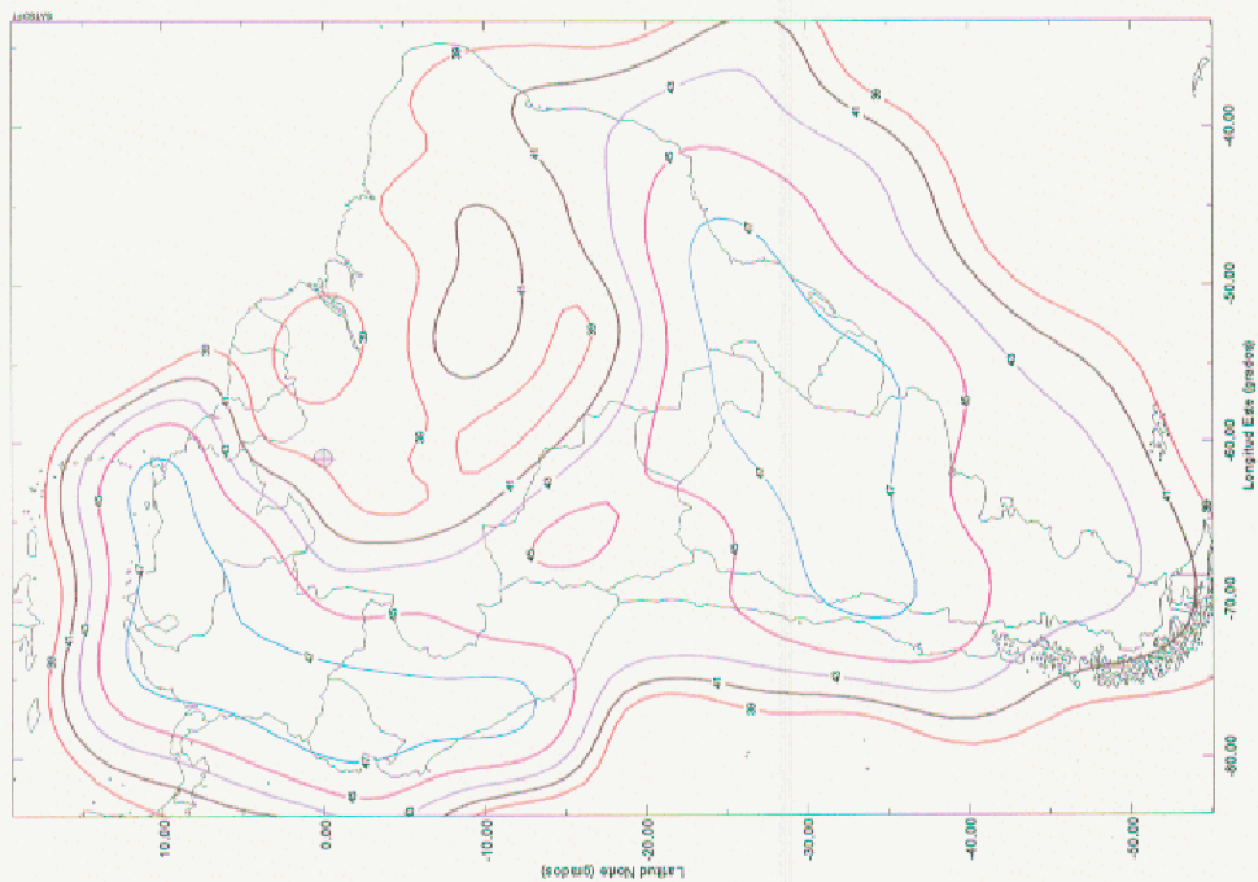


Figure 7.- Illustration of the AMAZONAS-1 South America transmit coverage (61°W). EIRP characteristics (dBW)

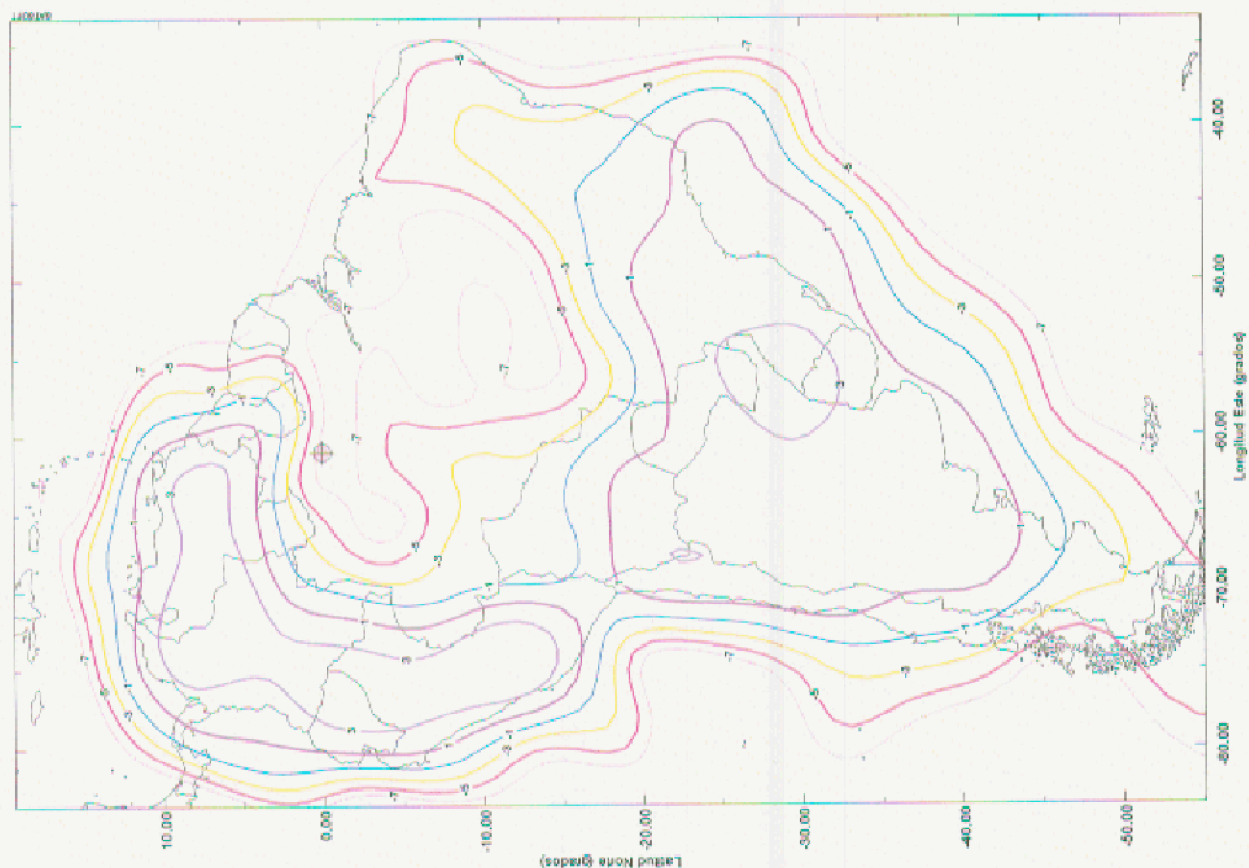


Figure 8.- Illustration of the AMAZONAS-1 South America receive coverage (61°W). G/T characteristics (dB/K)

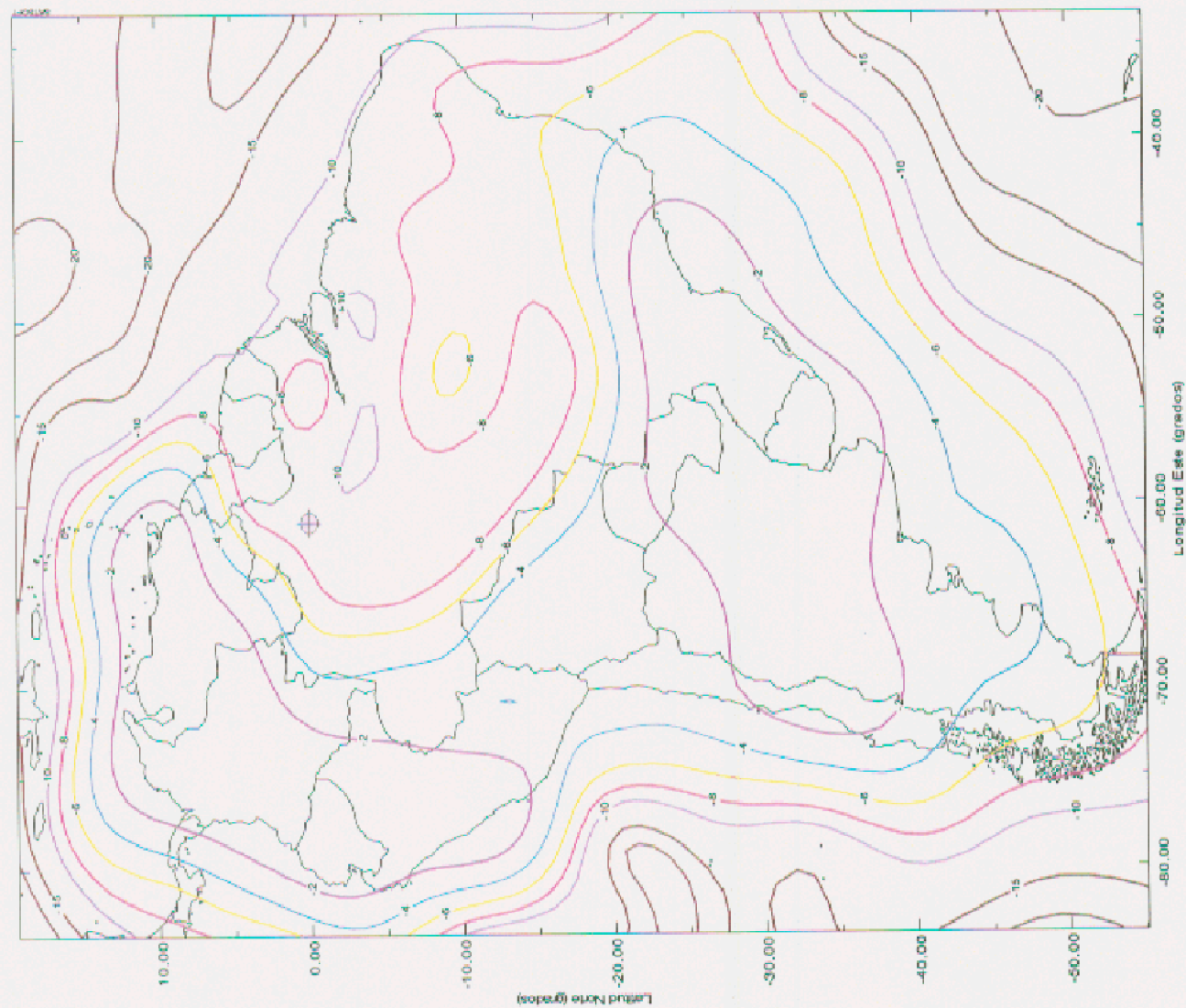


Figure 9.- Illustration of the AMAZONAS-1 transmit beam. Gain Peak 29.9 dBi

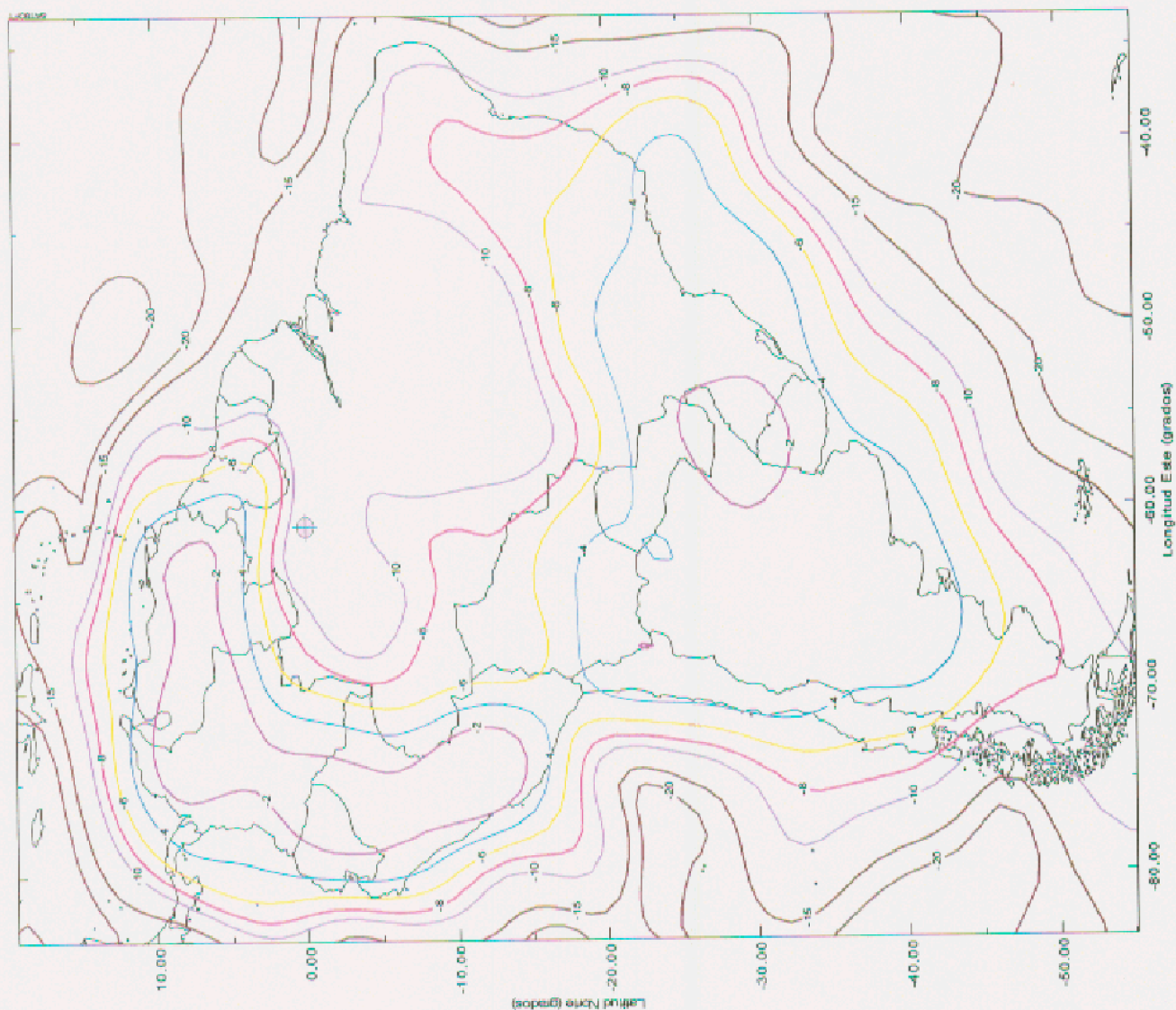


Figure 10.- Illustration of the AMAZONAS-1 receive beam. Gain peak 30.0

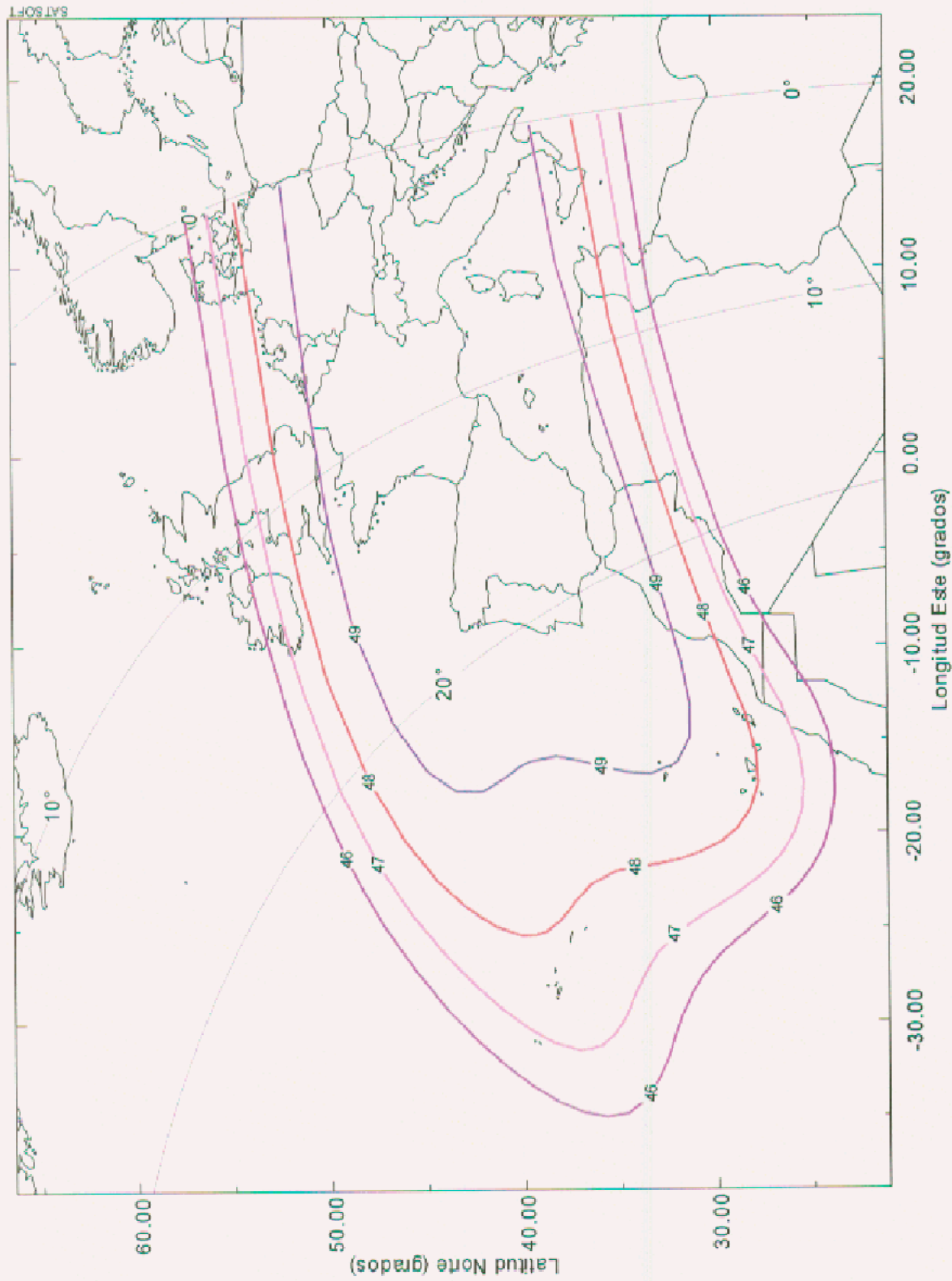


Figure 11.- Illustration of the AMAZONAS-1 Europe transmit coverage (61°W). EIRP characteristics (dBW)

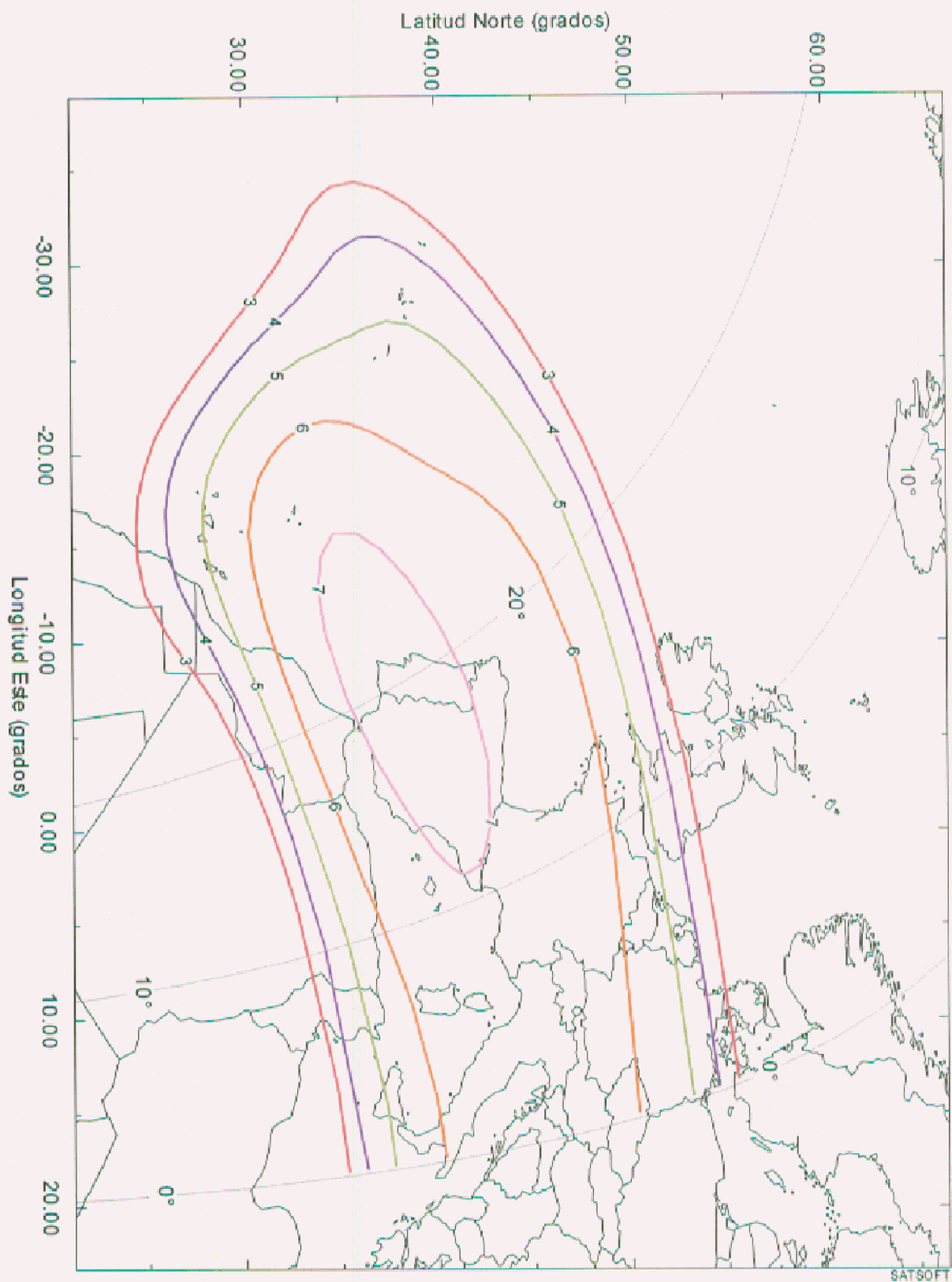


Figure 12.- Illustration of the AMAZONAS-1 Europe receive coverage (61°W). G/T characteristics (dB/K)

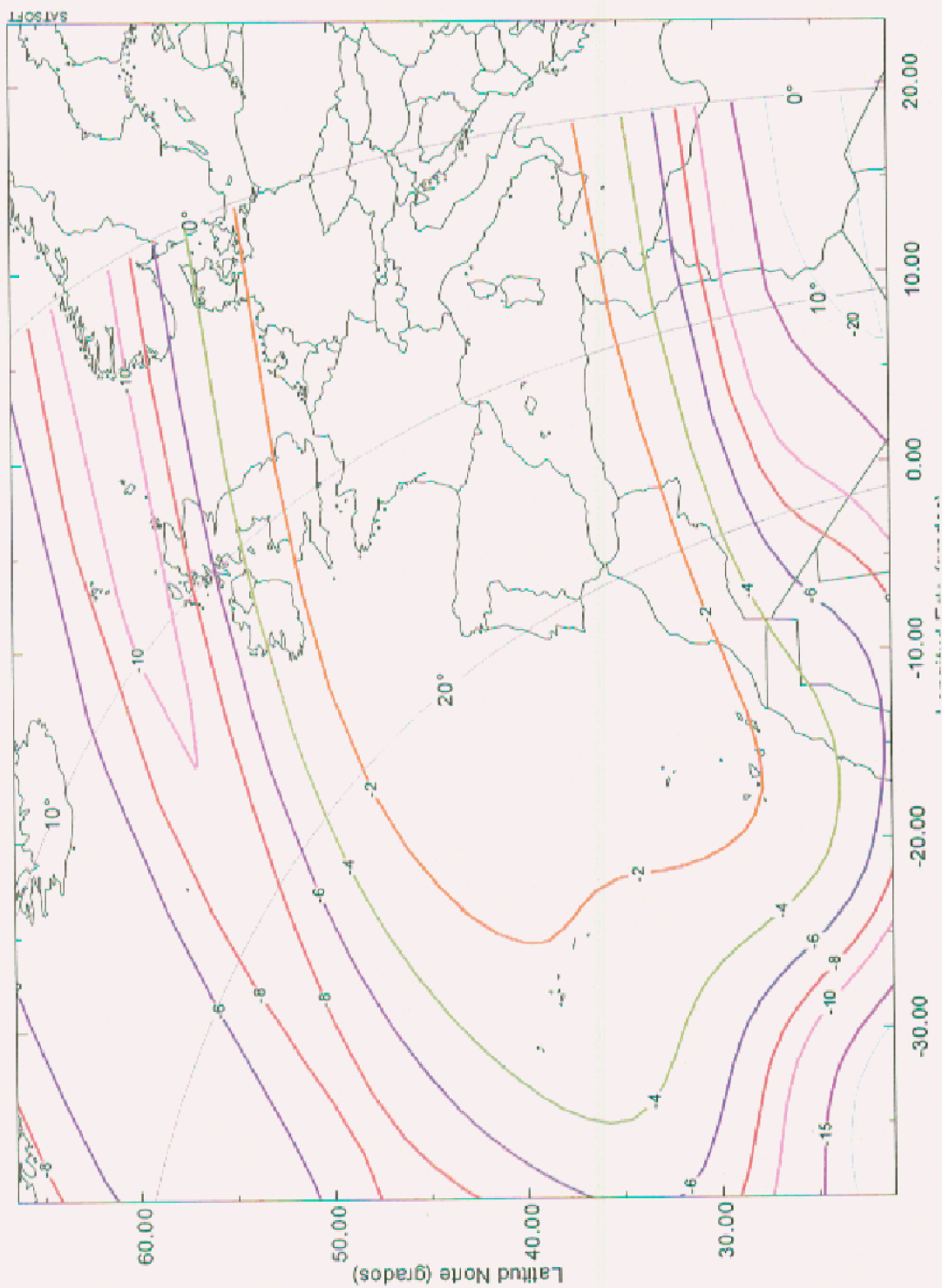


Figure 13.- Illustration of the AMAZONAS-1 Europe transmit beam, Gain peak 32.3 dBi

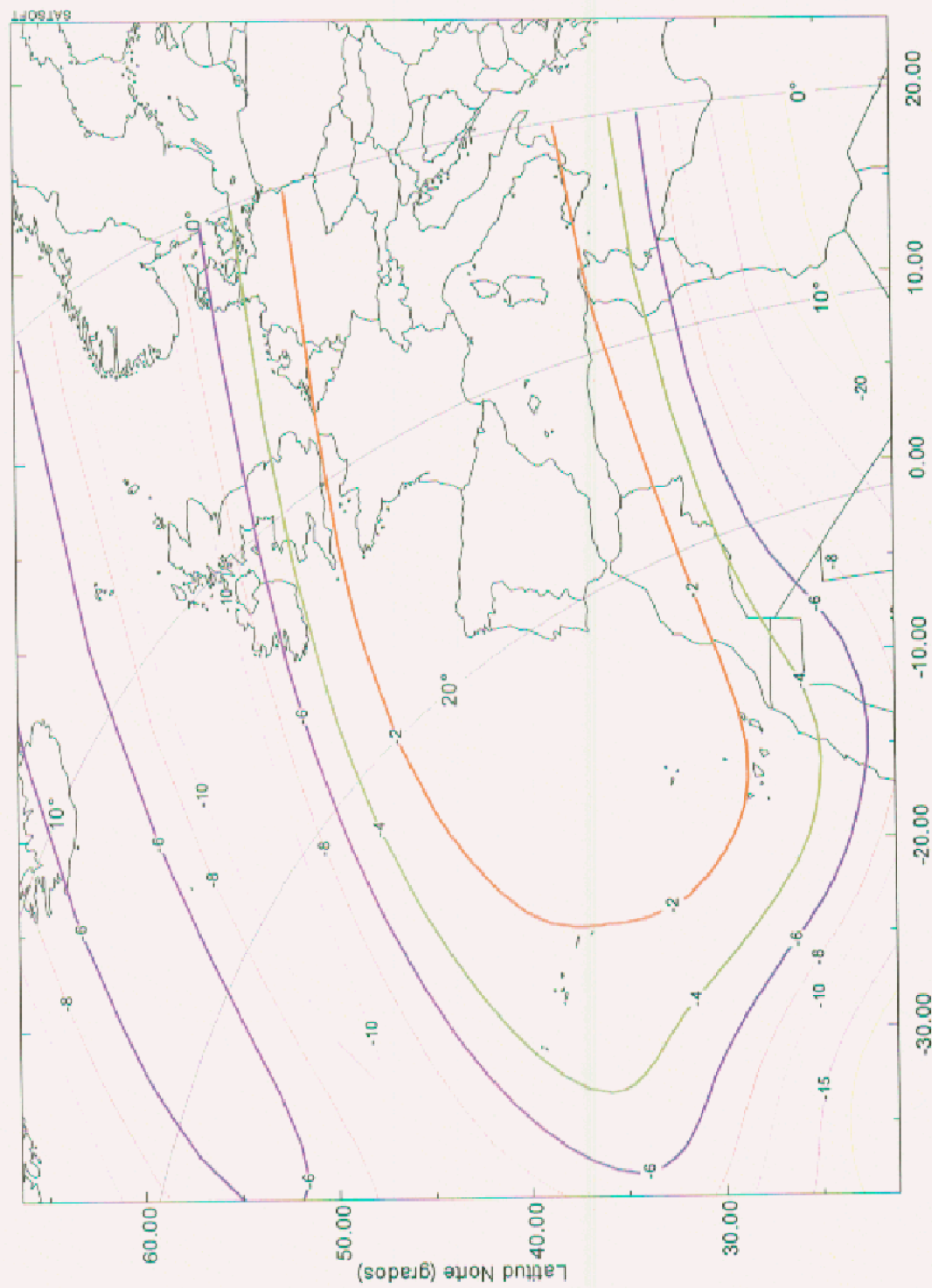


Figure 14.- Illustration of the AMAZONAS-1 Europe receive beam. Gain Peak 32.5 dBi

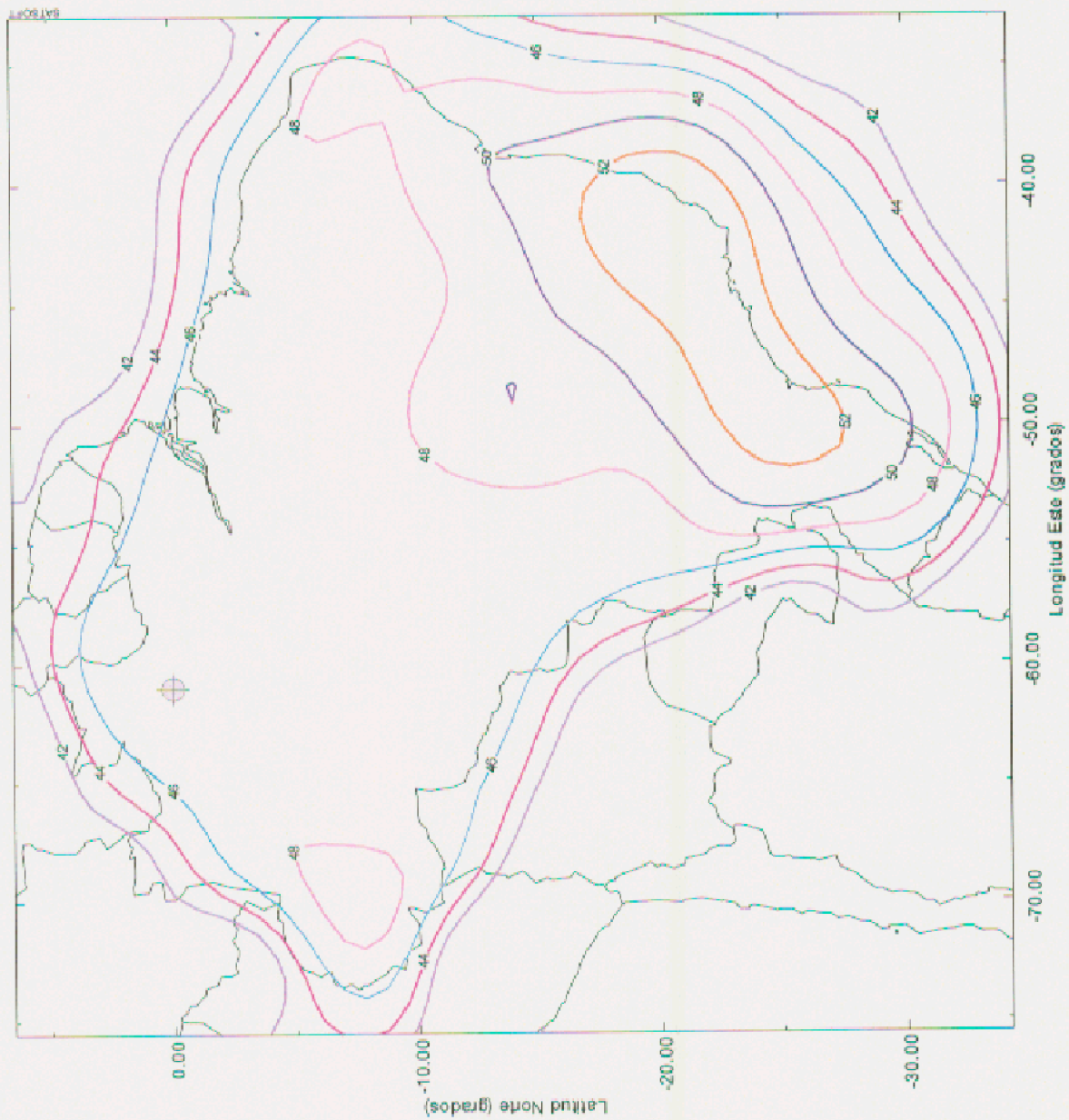


Figure 15.- Illustration of the AMAZONAS-1 Brazil transmit coverage (61°W). EIRP characteristics (dBW)

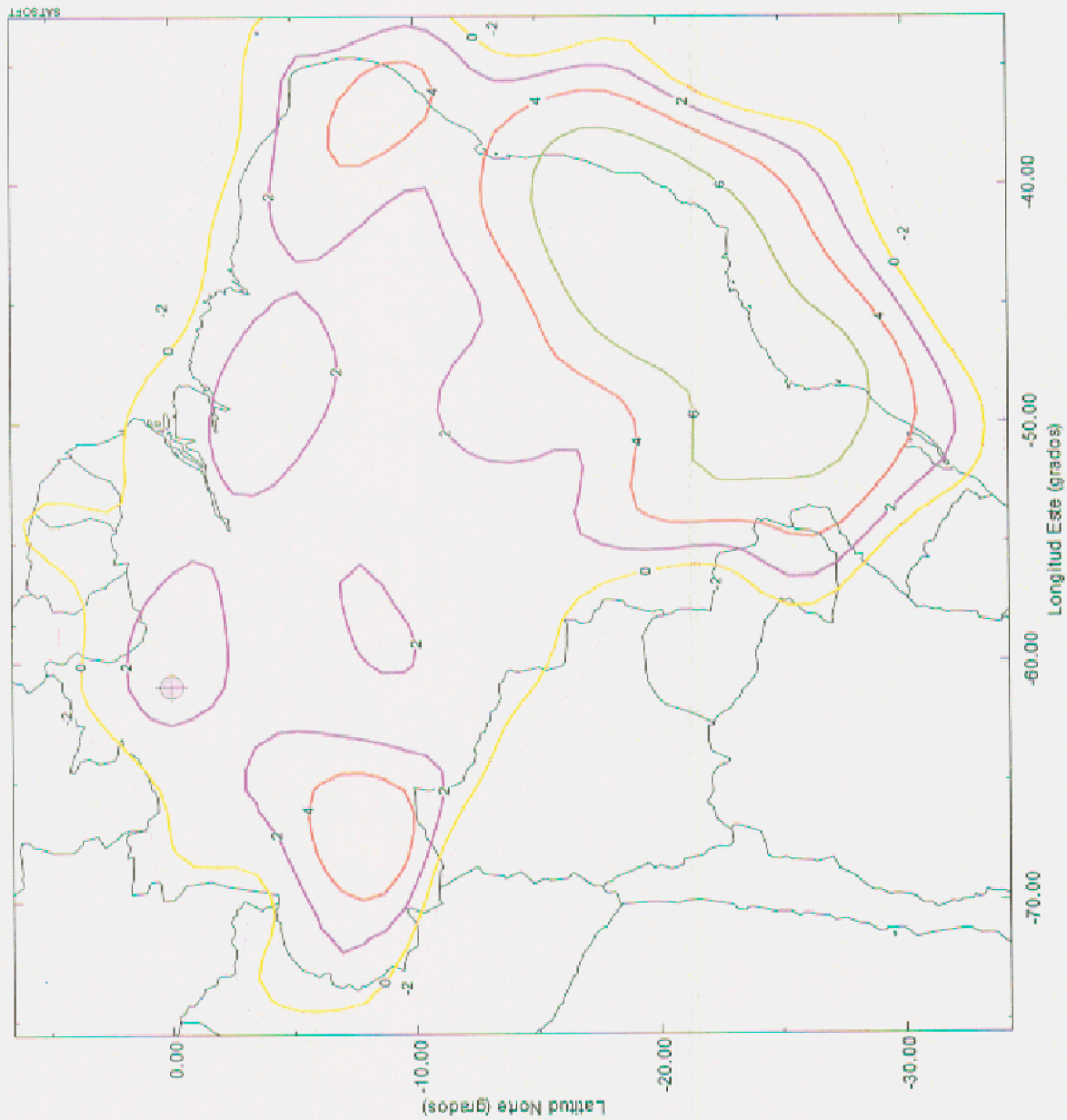


Figure 16.- Illustration of the AMAZONAS-1 Brazil receive coverage (61°W). G/T characteristics (dB/K)

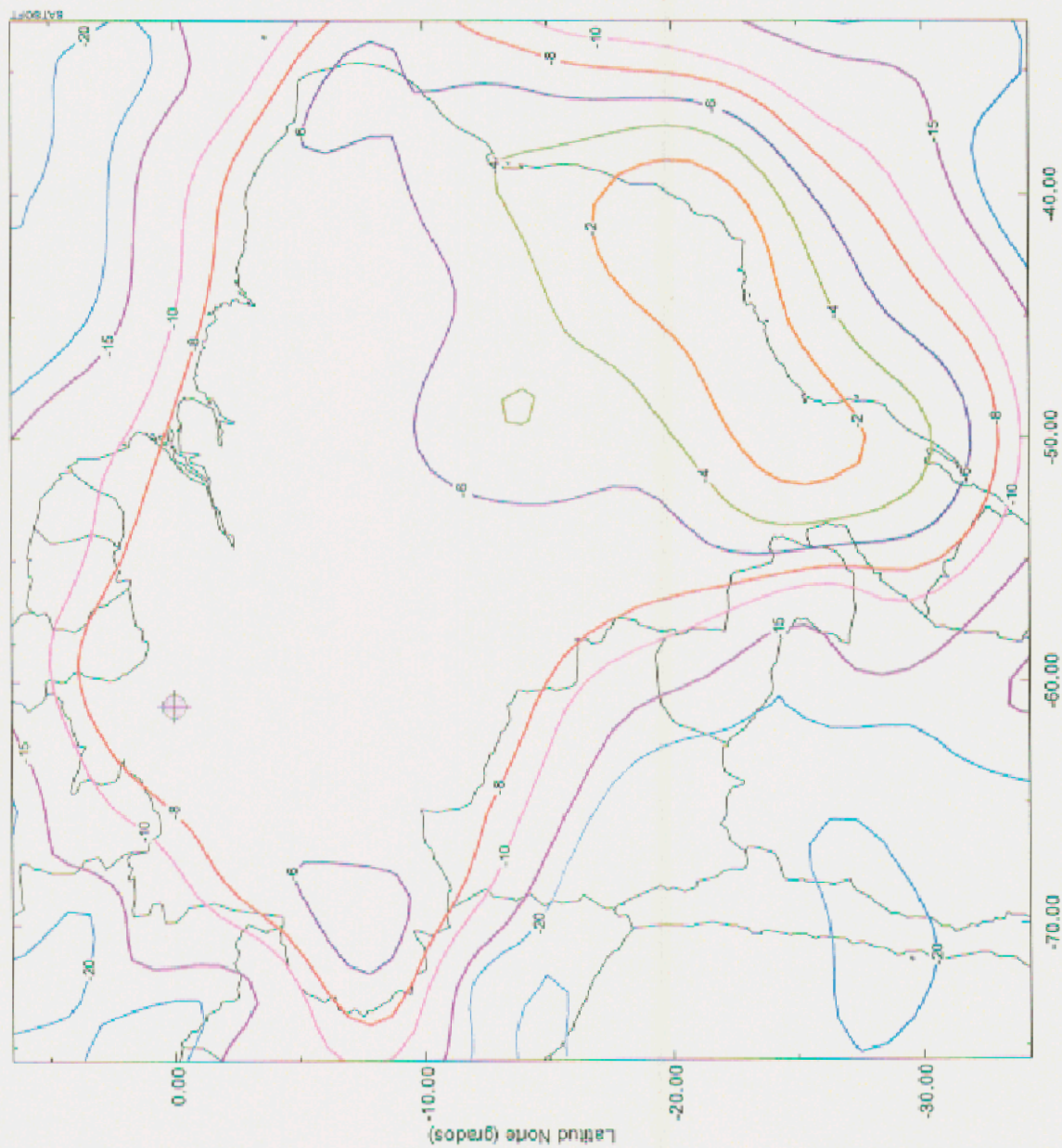


Figure 17.- Illustration of the AMAZONAS-1 Brazil transmit beam. Gain Peak 34.9 dBi

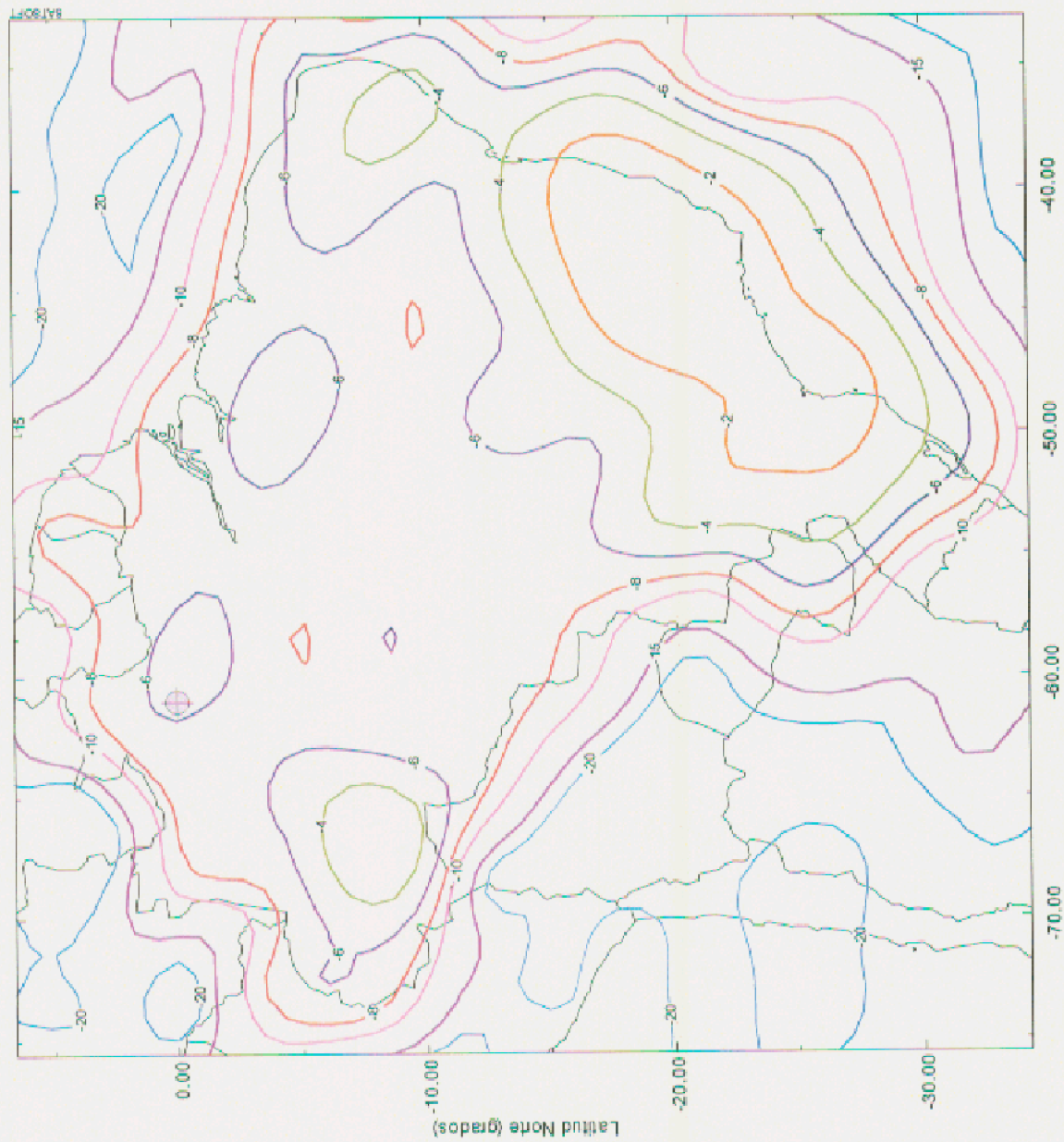


Figure 18.- Illustration of the AMAZONAS-1 Brazil receive beam. Gain peak 35.2 dBi

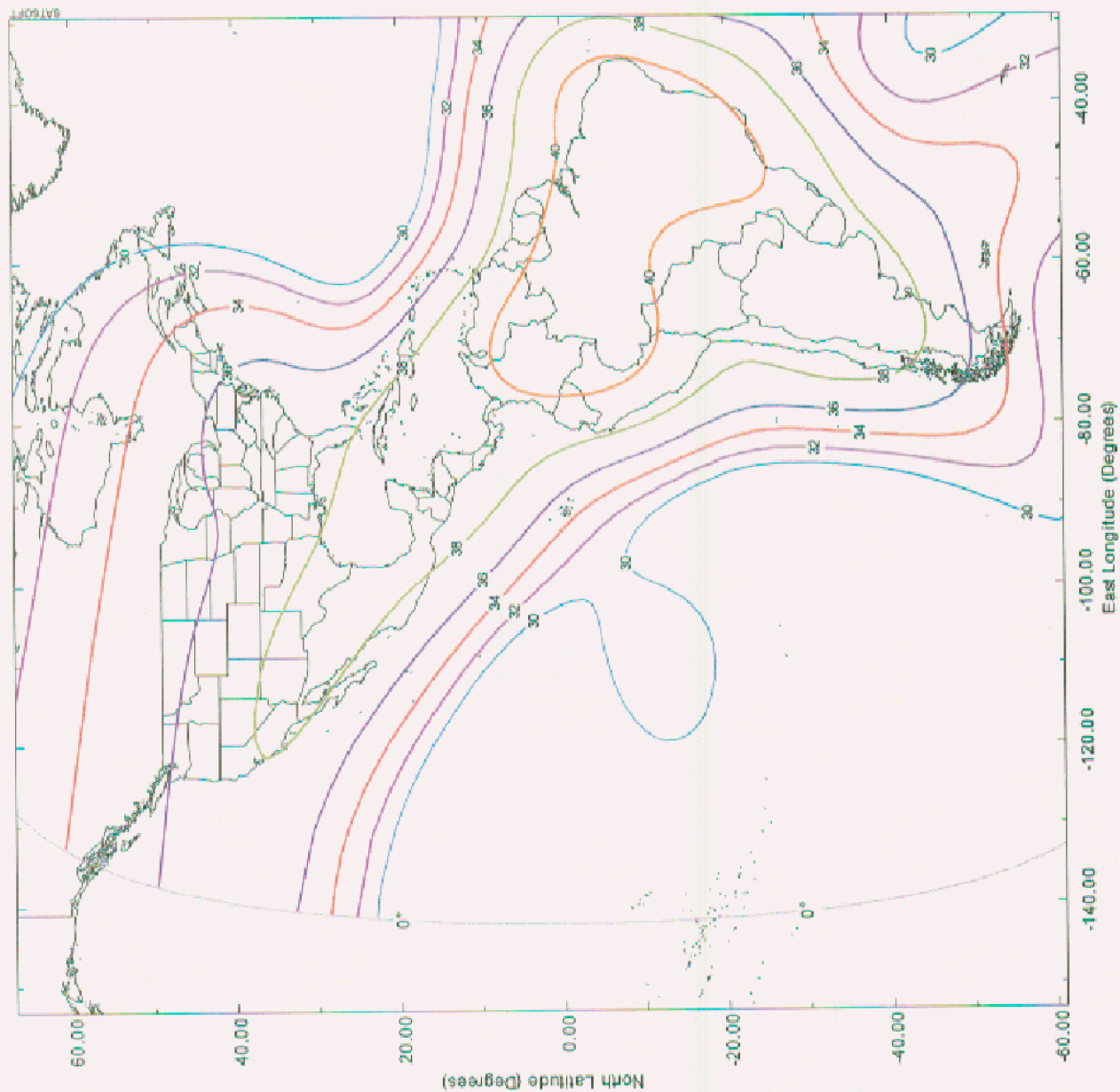


Figure 19.- Illustration of the AMAZONAS-1 C-Band Panamerican transmit coverage (61°W). EIRP characteristics (dBW)

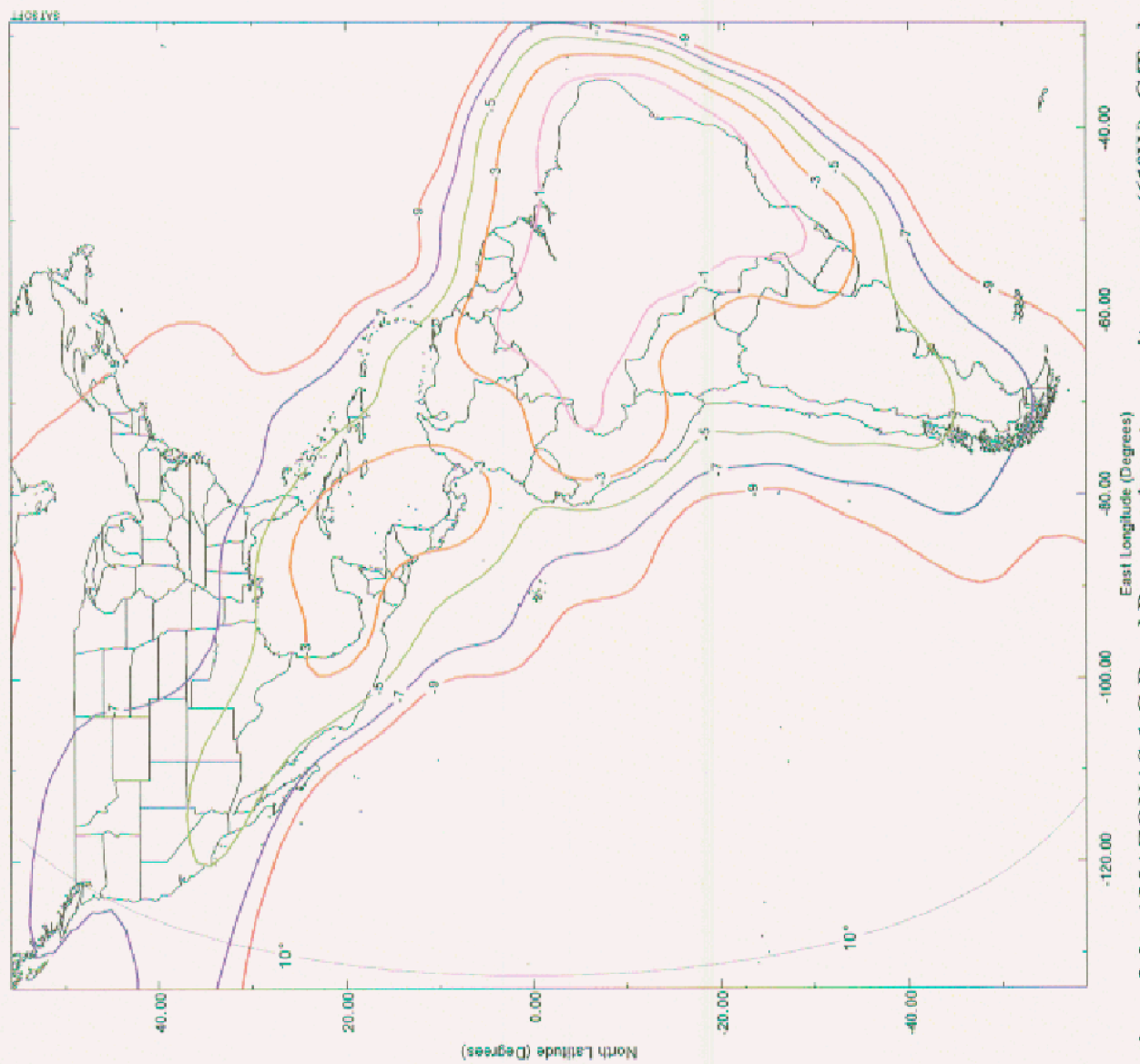


Figure 20.- Illustration of the AMAZONAS-1 C-Band Panamerican transmit coverage (61°W). G/T characteristics (dB/K)

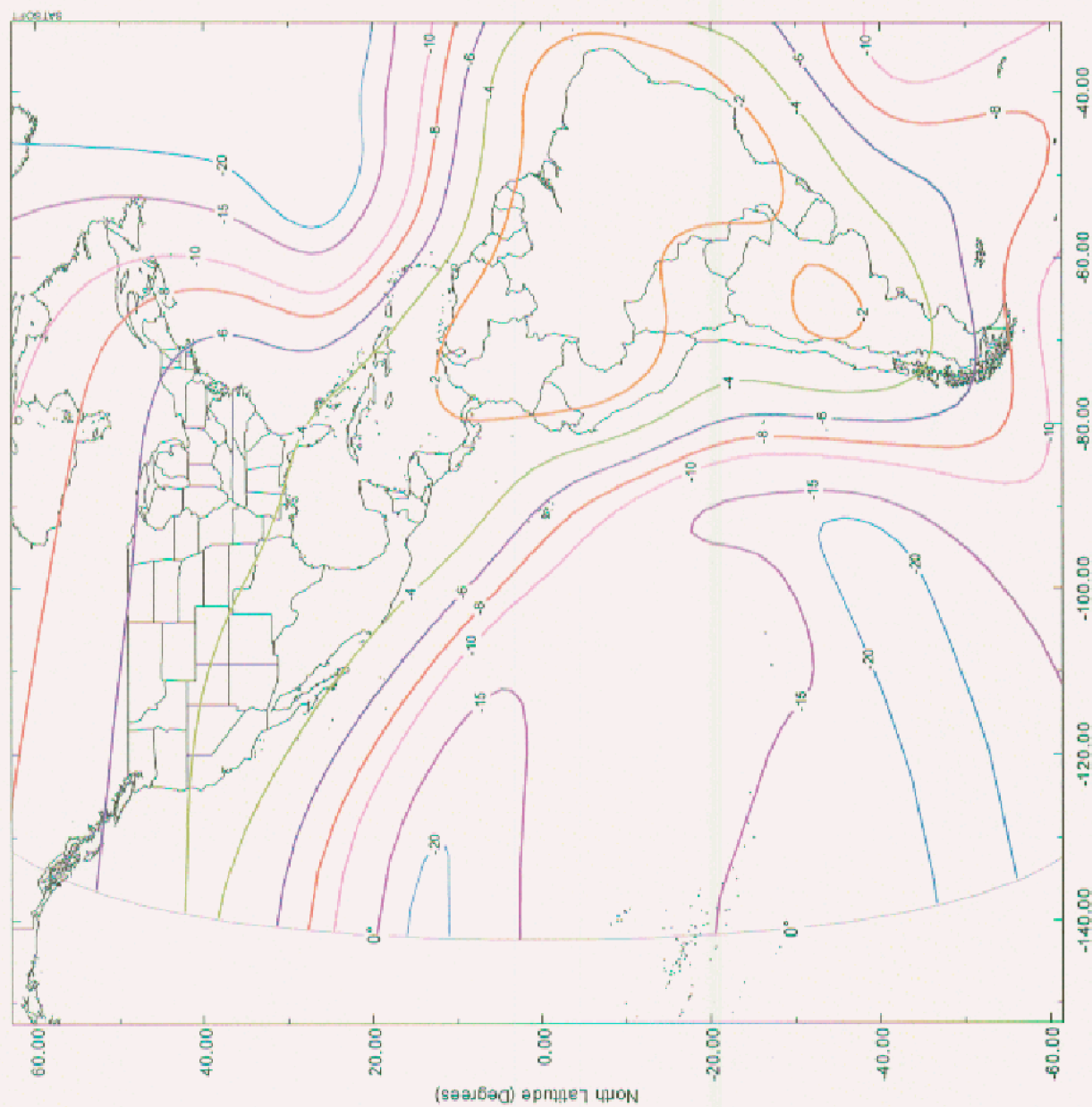


Figure 21.- Illustration of the AMAZONAS-1 C-Band Panamerican transmit beam. Gain Peak 25.3 dBi

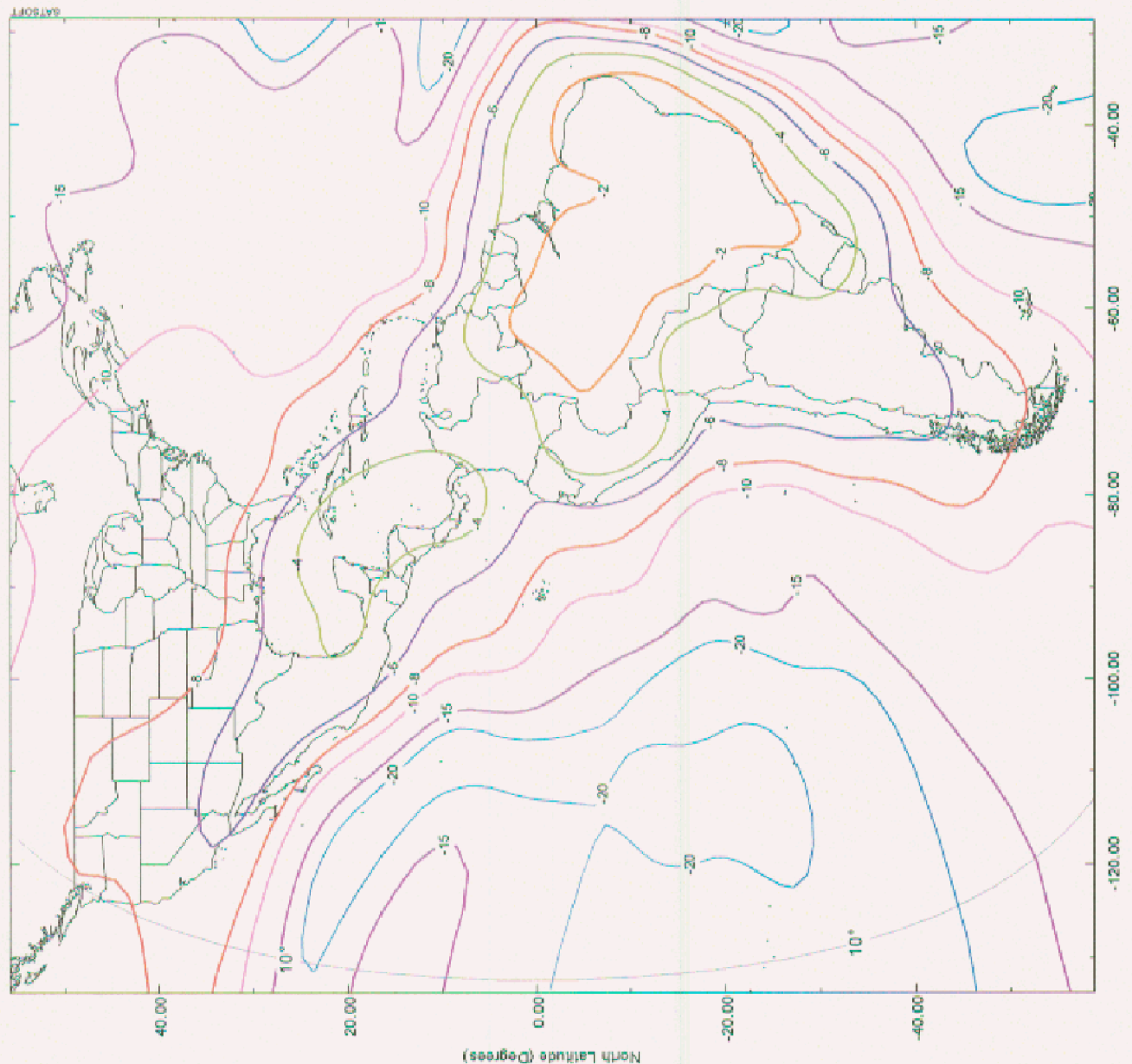


Figure 22.- Illustration of the AMAZONAS-1 C-Band Panamerican receive beam. Gain peak 25.5 dBi